



## Towboat Operating Area Analysis

**Start Date:** Oct 2005

**Projected  
End Date:** Mar 2006

**Lead Researcher(s):**

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**Problem Addressed:**

It is well known that most towboats operating on the Upper Mississippi River from March through November depart the area during December through February. This phenomenon occurs because operating conditions become extremely difficult or impossible due to winter ice conditions. This migration of towboats and barges into the area in spring and out of the area in fall is constitutes an unsteady state condition. If an analyst seeks to mathematically model this type of state, modeling techniques applicable to such systems must be used. Knowing that most towboats and barges depart the Upper Mississippi in winter leads an inquisitive observer to ask "Where do they go?" Do the departing vessels simply tie-up somewhere and cease operating? Do they move to other parts of the inland waterway and continue operating? If they migrate to other parts of the system, does their migration cause the recipient areas to act as unsteady state systems? This scope of work seeks to answer these questions by performing the following tasks: Task 1. Assemble OMNI, LPMS and WCSC data for the years 2000 through the most recent year available. Task 2. Determine the number of unique towboats that operate on the Upper Mississippi during the March-November time period. Task 3. Sort the towboats, in descending order, by number of lockages Task 4. Determine the number of towboats required to account for 90% of all tow lockages on Upper Mississippi locks. Task 5. Determine where the towboats in the 90% group operate during the December-February time frame. Task 6. For those towboats in the 90% group that operate in areas where they make lockages through locks, determine the percent of lockages attributable to the 90% group. The lockages attributable to the 90% group will be displayed for each lock where the 90% group operates. For each lock where the 90% group operates, determine whether steady state modeling techniques are sufficient, or must non-steady state techniques be used. Task 7. The results of the analysis will be presented in a report suitable for publication on the Navigation Economic Technologies web site.

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**Objective:**

The objectives are to determine where (if anywhere) the towboats leaving the Upper Mississippi River in winter go to work and how that affects the stability of operations in the U.S. inland waterways. A report quantifying the results was prepared.

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**Benefits:**

The report quantifying the seasonal migration of towboats among U.S. inland waterways supports future analyses of the waterway system. In particular, the results support the development of the NaSS model by providing inputs on the seasonality of traffic, on the appropriateness of steady-state approximations for various components of the U.S. inland waterway network, and on the conservation of equipment (i.e., towboats) in this network.

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**Status:** Completed.

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**Contract Data:**

130465, W1000

**Progress:**

**Products (Bookshelf/Toolbox):**

[Report by Min Wook Kang, Paul Schonfeld, Mar 16, 2006 \(1.00 MB, pdf\)](#)

[Report by Mark Lisney, Oct 17, 2006 \(463 KB, pdf\)](#)

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**Related Links:**

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